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# CDF Operations Report

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3-May-2004

All Experimenters' Meeting



# Store Summary

Store	Start Date	Duration (hours)	Inst Lum Initial e30 cm-2 s-1	Int. Lum Delivered nb-1	Live Lum nb-1	Tevatron Terminate
3444	4/26	33.1	56.0	2,856	2,385 83.5%	OK
3446	4/27	1.3	15.6	31.1	12.2 39.1%	Separator Spark
3456	4/28	26.2	51.5	2,109	1,602 76.0%	OK
3458	4/30	31.9	53.5	2,496	2,229 89.3%	OK
3460	5/01	30.5	59.0	2,659	2,163 81.4%	OK
3464	5/03	ongoing	54.2			
Total 3444-3460		123.0		10,152	8,392 82.7%	
FY2004		1,988		152,745	122,950 80.5%	

**Silicon out of DAQ (cooling problems) for ~50% of integrated luminosity.**



# Store Summary (cont'd)

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- Store 3444 -
  - Paused 45 minutes for abort gap glitch
  - Silicon out 45 minutes readout glitch
  - Tev separator studies
  - Silicon out 45 minutes for ISL chiller failure (spare valved in)
- Store 3446 had separator spark during squeeze and was intentionally aborted when beam/luminosity could not be recovered.
- Store 3456
  - High proton halo beginning of store kept silicon out
  - SVX chiller trips twice - decide to run without silicon.
- Store 3458 - SVX chiller "repaired" late in store and silicon returned to DAQ
- Store 3460 - SVX chiller trips yet again - silicon once more removed from DAQ.



# CDF STATUS

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- Stores 3444-3460, COT continues in “compromised state” with SL1,2,3 off and SL4,5 at reduced gain.
- Work on COT gas recirculation system continues.
- Silicon is off while chillers are repaired.
- Silicon reports additional fallout from April 15 incident.
  - o Apr 15, 2004. AAK1 abort kicker prefire, ~180 Rad.
  - o 1 SVX ladder 8/10 chips, 1 SVX ladder 6/10 chips;
  - o 1 ISL ladder lost bias (8/16 chips).



# A Tale of Three Chillers





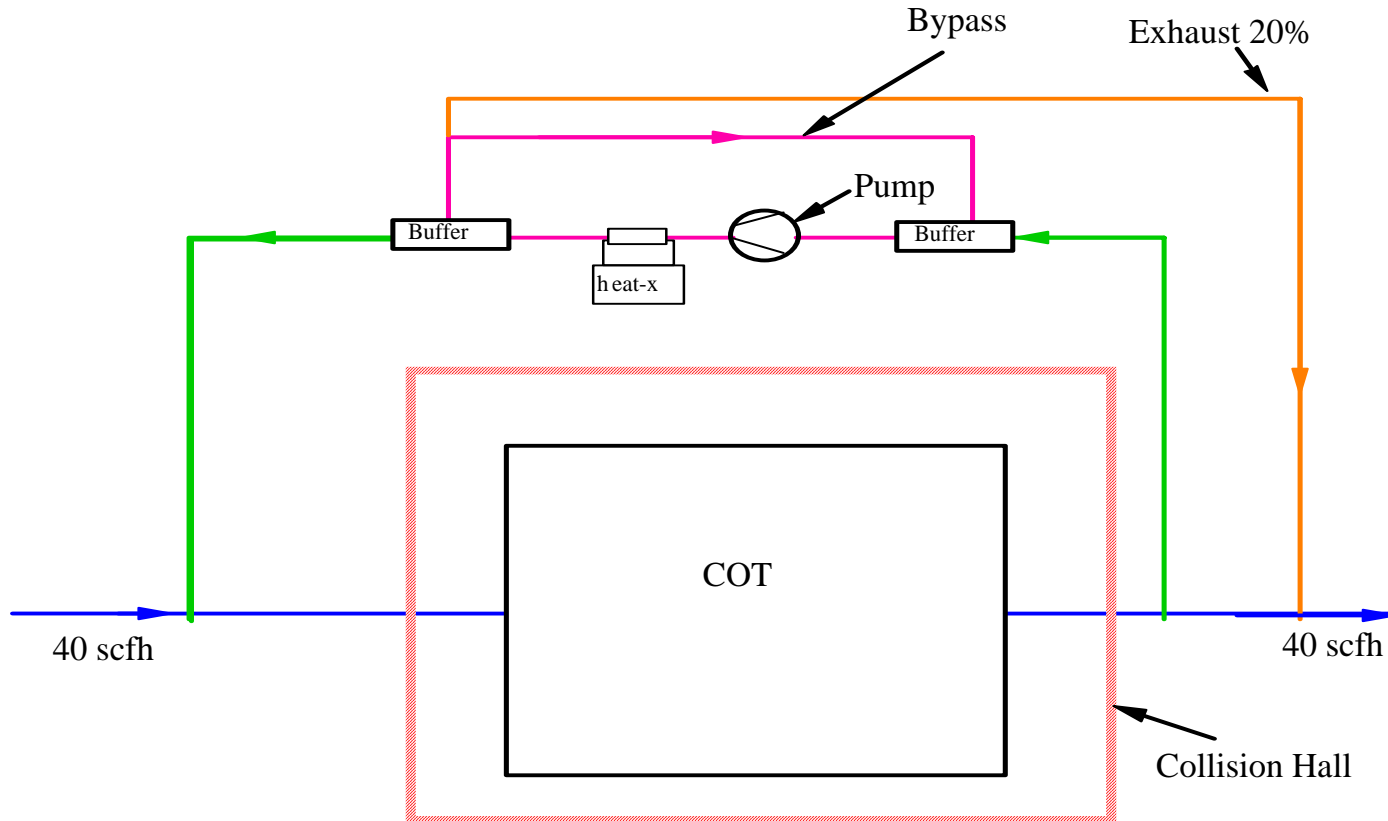
# Silicon Chiller Problems

- Silicon Systems (L00, SVX, ISL) are cooled by two systems.
- One cooling loop and chiller for SVX/L00 ladders. (water/glycol at  $-6\text{ C}$ )
- One cooling loop and chiller for ISL ladders and all port cards. (water at  $+6\text{ C}$ )
- One spare chiller that can be valved into either system
- If chiller trips off, safety system automatically shutdown all power to silicon. Historically, we have observed that thermal cycles have “hardened” problems into chips.
- In three years of running, no chiller problems that have taken silicon down for extended period of time.
- Tuesday, April 27: The ISL chiller tripped on “high side pressure” and would not reset. It was replaced by spare chiller.
- Thursday, April 29: SVX chiller tripped twice on HSP. Silicon left OFF and taken out of DAQ.
- Friday, April 30: Replaced valve that regulates chilled water flow to condenser on SVX chiller. Silicon powered back on and returned to DAQ.
- Sunday, May 2: SVX chiller trips again. Silicon left OFF and out of DAQ.
- Monday, May 3: All 3 chillers currently working but Silicon still OFF while we establish reliability of systems.



# Simplified COT Gas Recirculation Schematic

System to increase flow rate of COT gas from 40 scfh to 200 scfh is under test. COT HV on all superlayers will be returned to nominal full HV when this system comes online.



Slide courtesy Carl Bromberg



# Gas Recirculation System

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- **Change gas direction/speed through COT**
  - 20 scfh    Historical standard
    - One volume change every 30 hours
  - 40 scfh started Feb. '04. Also, flow reversal Mar. '04
    - No obvious aging improvement (or worsening).
    - Some aged wires start to recover on new input side.
  - 200 scfh    Imminent
  - 1000 scfh Perhaps during Summer shutdown, if needed
- **200 scfh system specifications**
  - Recycle 80%, exhaust 20% and make-up with new gas
  - No specific purification - no alcohol replacement
  - Leave room and install hooks for future enhancements
  - Meet lab and RR safety requirements

Slide courtesy Carl Bromberg





# 200 scfh System status

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- Mechanicals complete
- Instrumentation complete
- Pressure test complete
- Safety sign-offs & ORC (operation readiness) OK
- Code checkout in progress - pump on bypass
- System will go on-line when checkout complete
- Need 4 - 5 Stores with COT at full voltage for definitive evaluation

Slide courtesy Carl Bromberg